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Article

Listing quality: Chinese journal lists in incoherent valuation regimes

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Lists of endorsed and discouraged scholarly publications recently emerged as an important transition in Chinese journal evaluation. Among the targeted users of these lists are researchers, who are to avoid publishing in discouraged journals and focus efforts on endorsed journals. However, it is unclear how these lists affect researchers' valuations when choosing publication outlets. This explorative study investigates the reception of such journal lists in Chinese scientists' research practices. Our findings suggest that three logics interact in respondents' journal valuations: institutional evaluation regimes, differing epistemic cultures, and the influence of the commercial publishing industry. The reactive effects of both endorsed and discouraged journal lists appear to differ with the ranking status of universities, the seniority of scholars, and research fields. Apart from the new institutional evaluation regimes in this interplay, there appear to be more predominant factors than journal lists that inform publishing choices: quantitative indicators, publishers' branding, epistemic cultures, and editorial procedures and publishing models.

Keywords: journal lists; valuation regimes; reactivity; epistemic cultures; Chinese science.

1. Introduction

In the last two decades, the journal impact factor (JIF) has helped catapult Chinese scientific publication output to the highest in the world. Chinese researchers have been strongly encouraged to publish in high-impact journals through competitive pressure and high rewards. However, the success in quantity does not always correspond to desirable quality levels. Fraud and paper-mills are increasingly exposed, threatening the credibility of Chinese science (Tang 2019; Mallapaty 2020; Else and Van Noorden 2021). In addition, gaming behaviour is widespread and takes on ever more exotic forms, including gaming the JIF (such as through citation cartels, coercive citations, and citation stacking; see Fister Jr., Fister, and Perc 2016; Biagioli and Lippman 2020), or even questionable artificial intelligence (AI)-generated or AI-rewritten texts (Else 2021). The distorting incentives caused by overemphasized quantified performance strike at the heart of Chinese science evaluation systems. COVID-19 publication delays caused by the prioritization of prestigious journals made the state aware of the serious shortcomings of its scientific publication system and its quantitative evaluation system (Shu, Liu, and Larivière 2022), accelerating its transition of research evaluation policies and funding protocols to more qualitative assessments. In the midst of this evaluation reform, a reduced reliance on the Science Citation Index and a prioritization of domestic journals are advocated by several national policies (Zhang and Sivertsen 2020).

In the context of these policy changes, various journal lists have appeared to address issues with quantified journal indicators, to support the research evaluation transition, and to fix publishing fraud in Chinese science. The journal lists were to provide a new metric for researchers, institutions, and policies in research evaluation settings (Pölönen et al. 2021). To deal with publishing misconduct and paper-mill issues, *discouraged journal lists* have been developed to dissuade researchers from publishing in questionable international journals, such as the *Early Warning List of International Journals* published by the National Science Library of the Chinese Academy of Sciences (CAS). This kind of list reflects concerns over inferior research publications but also the involved drain on public resources, as article processing charges (APCs) may be wasted on dubious publications in questionable journals. To echo the prioritization of domestic journals in research evaluation reform, *endorsed journal lists* have been established to encourage researchers to publish more in domestic high-quality journals, such as the *Chinese STM Journal Excellence Action Plan*, advocated by seven state ministries (CAST 2019). This kind of list is based on the criteria valued in research policy and reflects specific policy concerns (Wang et al. 2023).

These journal lists have been advocated and developed by Chinese governmental agencies and research organizations as a governance tool to regulate publishing choices and improve research evaluation practices. The criteria used to compose

journal lists express the journal qualities that the state wants to prioritize and those it wants to disqualify. However, it is unknown if these state-led criteria of journal quality adequately correspond to journal quality criteria perceived and used by scientists in their journal selection. It is one thing to declare preferred journals, but the effect of issuing such lists is mediated by research organizations, references to international practices, and the complex reasonings that inform where scientists ultimately choose to publish their work. In this study, we investigate the use of journal lists in Chinese scientists' research practices, aiming to understand how scientists react to new journal lists in China, how these lists affect their valuation of publishing channels, and how they perceive 'journal quality' in their research practice.

The incongruences between valuation regimes (here various state-endorsed lists, national and international quantified indicators, publisher branding, or research communities) are not only of interest to the particular Chinese context. We argue that the Chinese case offers interesting material to elaborate the theoretical understanding of how an ecology of valuation regimes operates. In the establishment of national encouraged and discouraged lists, state actors attempted to displace the dominant, quantified journal valuation regime of the JIF, creating incoherencies that researchers then navigate by assessing which valuation regime matters for them. Rather than a top-down imposition, the incoherence in valuation regimes creates some manoeuvring space for researchers. We will argue that institutional intermediaries play a decisive role here: journal lists as administrative tools of the new valuation regime have very different effects depending on people's situated work conditions and how their host organizations translate the regime's pressures.

The next section presents our theoretical framework, relying on social theories of valuation and evaluation in epistemic cultures. We then describe the recent shifts in Chinese research evaluation policies, providing the necessary context for the list of development initiatives. Our methodology section deals with the particular difficulties of doing qualitative social science research on the Chinese research system, especially in times of COVID-19, before presenting the results. Our conclusions pertain to both the potential and limitations of journal lists in the transformation of Chinese research evaluation and the inherent contradictions and limitations of journal lists in general.

2. Theoretical framework

2.1 Regimes of journal valuation

Our understanding of the establishment and consequences of journal lists is informed by the notion of valuation regimes: how the worth/value of an object is produced, diffused, assessed, negotiated, and institutionalized based on an array of criteria across a range of settings (Lamont 2012; Fochler, Felt, and Müller 2016; Hessels et al. 2019). In terms of journal valuation, different actors attribute valued qualities to journals based on sets of evaluative rules (normally articulated in the specific terms of the valuation regime) towards a more objectified and operational notion of 'quality'. Journal valuation is a socially constructed process and there is no complete suite of indicators that could exhaust all the worth dimensions of journals at stake in valuation practices. Moreover, diverse primary interests across research communities, publishers, funding agencies, policymakers, and data providers are all likely to comply with, resist to, or debate journal valuation regimes in order to shift the terms and the ranks of journals in various evaluation schemes (Wang et al. 2023).

Journal lists express the needs of specific actors and entail an attempt to change the valuation of journals (Goody and Goody 1977). Quality dimensions of journals are expressed through journal lists based on the specific considerations of an engaged actor. For example, there are national journal lists, such as the Norwegian list (Pölönen et al. 2021) and the list of Excellence in Research for Australia (Vanclay 2011), developed by national government agencies to support an evaluation framework. Evaluators are expected to ascribe values to journals by making lists based on a set of evaluative criteria, organizing the ingredients to make and share the list, and establishing it as an authoritative evaluation resource. For example, the predatory journal list made by the individual librarian Beall (2017) was based on a series of predatory characteristics of open access publishing channels to depreciate the value of journals, and this list was recognized and shared by librarians and scientists as a reference resource to avoid unreliable journals and publishers. The new Chinese journal lists share similar rationales. The state intends to deploy journal lists as a part of the research evaluation and allocation infrastructure to meet its particular needs: to support the research evaluation transition and to fix publishing fraud (Wang et al. 2023). Even though the Chinese list-making bodies are not necessarily the state itself, the implementation bodies are under state guidance to meet the same nationally identified goals. Journal lists have therefore appeared as supportive evaluative instruments to categorize, compare, and assess scholarly publications, folded within other elements in the research evaluation ecosystem (Helgesson 2016).

2.2 Reactivity and unexpected performativity

Although the establishment of journal lists is aimed at policy enaction and making a change, the actual consequences of implementing lists may be unpredictable. Policy makers expect these lists to have consequences by altering publication practices. When journal lists are deployed as an evaluative measure to change the journal valuation regimes in research evaluation systems, they are both consequential and controversial to different actors. New measures set up new standards to value publications, and accordingly, actors who intervene in the objects or practices being measured will react to these new standards by changing their behaviour to improve their evaluation performance—although not necessarily according to expectations. These practices have been widely studied in the context of scholarly communication and research evaluation. Espeland and Sauder (2007) depict how law schools adjust their behaviour for better rankings. Rushforth and de Rijcke (2015) investigate how researchers engage in valuing the JIF in their knowledge production practices. Fochler, Felt, and Müller (2016) describe how young researchers adjust their valuation logics of people, objects, and practices to display scientific growth. These studies indicate the reflexivity of researchers, who will react and alter behaviour when being measured and evaluated by changing standards and criteria.

Moreover, the quality criteria behind the lists may elicit more profound consequences, that is, actors may change

their valuations to what lists measure (Espeland and Sauder 2007). Thereby, lists may not only change behaviour but also have a more constitutive effect (Dahler-Larsen 2014). Indicators of quality tend to displace what counts as quality, that is, they may come to depreciate what is not expressed in the indicator. The unintended consequences involved in this displacement sometimes will go to the extreme, when lists eventually become all that matters. This raises issues of performativity: lists then no longer measure some abstract quality but may increasingly come to define quality itself (Mingers and Willmott 2013). However, while the literature on performativity highlights these redefining effects from a critical perspective, such redefining effects are not automatic. Performative effects require uptake in valuation regimes and when valuation regimes are multiple and incoherent, attempts to redefine value may fail or be only partial, as we will show.

2.3 Epistemic cultures

When the new journal valuation regimes enact changing criteria and standards, they intervene in, and interact with, pre-existing norms of epistemic cultures (including previously established valuation regimes). Following Knorr-Cetina (1999), epistemic cultures refer to the different features of a knowledge-producing community: the meaning of the empirical, the enactment of object relations, and the construction and fashioning of social arrangements within science. In the study of Hessels et al. (2019), epistemic cultures include social and cultural practices that value research data, arguments, people, grants, and publications. In our context, we will highlight how these cultures have their own notions of what constitutes 'good' journals, with their own standards of evidence, good practices, and their own evaluation cultures (Whitley 2000; Hicks et al. 2015; Hessels et al. 2019). Each field has its intrinsic and shared epistemic criteria, norms and values for quality research, and its respective scientific elites and peer review communities. Although we will not explore the detailed consequences for the content of shared knowledge, these epistemic differences connect with specific publication cultures, wherein researchers develop particular publishing strategies and make particular choices in anticipation of publication review and reception.

This specificity of publication cultures and the diversity of epistemic cultures present challenges to list-makers. Despite the widespread use of the JIF as a proxy of journal quality and prestige, such universalizing indicators are challenged by differences between epistemic cultures, rooted in their ways to generate data, their argumentative narratives, and their mechanism of communicating ideas and results. These pre-existing valuation practices affect how researchers respond to new valuation regimes. Researchers in fields with strong traditions will be less likely to change publishing strategies even though they are aware of the external pressure of evaluative regimes (Hammarfelt and De Rijcke 2015).

3. A shift in the Chinese state research evaluation schemes

Recently, a series of national science and higher education policies (Ministry of Education & Ministry of Science and Technology 2020; Ministry of Science and Technology 2020; The State Council 2021) indicate the Chinese state's determination to shift from the over-reliance on quantitative science indicators. The new policies focus on more qualitative research evaluation, in terms of both scientific achievements and societal impact. In this research evaluation shift, three key points are worth noting to understand the role of journal list initiatives in Chinese science evaluation systems.

First, removing the over-reliance on quantitative publication and citation indicators in various research assessments is a top priority in China. During the last decades, the use and abuse of the JIF became extreme in managing, rewarding, recognizing, and distinguishing research organizations and researchers (Zhang and Sivertsen 2020; Shu, Liu, and Larivière 2022). Accusations of indicator gaming and other unwanted side effects created a demand for alternative benchmarks to evaluate research. For example, one of the measures proposed in the novel policy is the 'representative work' mechanism, designed to assess and emphasize the high quality of only a handful of sample publications.

The second key point in the shift is to develop more domestic journals and prioritize the relevance of domestic journals in the research evaluation. These are the motivations behind the endorsed journal lists. The *Chinese STM Journal Excellence Action Plan* intends to develop more domestic English-language journals. The journals in this list are regarded as local high-quality scientific publications with international influence. The list aims to encourage publication in such journals, and the new evaluation policy requires that one-third of representative works should be published in such national journals. Another endorsed journal list initiative matching this action plan is the *High-Quality STEM Journals Catalogue* (CAST 2019). This list aims to award publications in domestic journals the same credits as international journals in research evaluation.

However, the new policies also support the development of new quantitative metrics, including a Chinese science citation index. A Chinese version of the *Journal Citation Reports* (JCR) is the CAS Journal Ranking, developed by the National Science Library of the CAS. The CAS Journal Ranking, as a go-to list for journal selection for the Chinese science community, has announced it will replace the JIF with a new metric: the Superior Identification Index (Huang and Yang 2022) at the end of 2022, following the national policy direction. Previous modifications of the CAS Journal Ranking led to huge disputes in 2018 and 2019. For example, in 2018, the CAS Ranking grouped *Science Advances, Nature Communications*, and *PNAS* into Quartile 2 (Q2), while these journals are categorized in Quartile 1 (Q1) by Clarivate's *JCR*. In 2019, CAS started to publish a basic version of its Journal Ranking to support the internationalization of domestic journals and form the 'China SCI Journal Evaluation Plan' (Lanzhou Information Center 2021). The main alterations included adjusting and increasing the proportion of domestic journals selected in high quartiles, expanding the selection base of domestic journals, and improving the results of journal quartiles in disadvantaged disciplines. These changes triggered a debate about whether the new classifications correctly reflected the true status of journals from both scientists and journals.

The third key point concerns restrictions on open access publishing. The global shift to open access publishing brings challenges to the evaluation and valuation of publications and publishing venues. Low-quality open access journals are easy

to publish in, but difficult to distinguish from bona fide journals. This sabotaged the Chinese quantitative evaluation system, for it attempted to differentiate researchers by counting publications and citations. In the state-controlled publication system, a proliferation of discouraged journal lists constituted an attempt to safeguard the health of the evaluation system. The proposal to establish lists of discouraged journals was mentioned in various national science policies (Chinese Communist Party and the State Council 2018; Ministry of Science and Technology 2020). In addition, the new national policy requires publications with APCs exceeding 20,000 RMB to be reviewed by authors' organizations.

The development of encouraged and discouraged journal lists therefore reflects quite diverse concerns in Chinese research policy: the abuse of low-quality journals to game publication scores (and its reputational damage for Chinese science), the syphoning of public funds to international publishing or inferior journals, and a concern to develop a national research infrastructure addressing national priorities (for more details, see Wang et al. 2023).

3.1 Strong evaluation: the 'Double First-Class Initiative'

The creation of national university and discipline rankings for research evaluation affected the Chinese research system in its entirety. Chinese universities are publicly regulated by strong administrative management, rather than by markets (Ngok 2008). Therefore, universities rely on their ranking and research assessments to be deemed worthy of public funding. For example, the 'Double First-Class Initiative' programme was launched in 2015 with the aim to boost Chinese elite academic institutions to the global top (Liu, Turner, and Jing 2019), with initiatives under the heading of 'World First Class University' and 'First Class Academic Discipline Construction'. This valuation regime expresses the national ambitions to boost Chinese research to the global elite (Ahlers and Christmann-Budian 2023).

The construction of world-class universities and disciplines places more emphasis on strict performance evaluation. Evaluations of world-class universities and research disciplines are conducted according to formally specified procedures, which are organized by central state agencies, with systematic rules and evaluation schemes. These university and discipline assessments are ranked on a standard scale and published regularly. This approach to performance evaluation not only stresses efficiency and cost-effectiveness of university resource use but has also become the main means of accountability and budget allocation (Jiang et al. 2018). This highly institutionalized and formalized research assessment system is defined by Whitley as a 'Strong Research Evaluation System', in which budget allocation is closely tied to performance. One of its implementation consequences is typically increased competition for publications in leading journals and for gaining project funding for research on currently significant topics (Whitley 2007).

This strong research evaluation system affects how universities measure and incentivize individual researchers. Correspondingly, changes in the rigid evaluation schemes will also translate to research organizations and their staff. For instance, there is a new requirement in the fifth round of the discipline evaluation by the Ministry of Education, demanding 'the evaluation of the representative works combines China domestic journals and international journals'. 'Science Citation Index and Essential Science Indicators cannot be used as the direct judgement criteria', and it is required that 'a certain percentage of the representative works must include publications in China domestic journals' (Ministry of Education 2020). Generally, universities translate these assessment pressures into institution-level incentives and performance requirements, that is, transfer these requirements to their researchers and staff, for example, as an indicator of publications. Each university, based on its own needs, designs its own incentive system to encourage researchers to publish more in the valued publication venues to perform well in the discipline ranking assessment. This logic affects the way researchers and their organizations perceive journals' quality and desirability as a publication outlet.

The effects of valuation regimes on researchers are described as both weak and strong, especially in China. Valuations (whether indicators, lists, or rankings) can be presented as dominant forces, which deeply affect or even distort publication practices, ultimately redefining 'quality' itself. At the same time, valuation regimes are multiple and even contradictory, contrasting national, international, and epistemic culture-specific valuations. This paper investigates how these forces play out in research practice, from researchers' perspectives. Specifically, this study aims to understand the reaction of Chinese scientists to new journal list initiatives and whether and how these lists inform their actual publication strategies.

4. Methodology

We chose a qualitative interview method, as its dynamic conversations enabled us to access researchers' perceptions, understandings, and situational definitions and constructions of evaluation and publishing reality (Punch 2013). When conducting this study, we faced two difficulties. The first was the COVID-19 situation in China, preventing travel to China for fieldwork and face-to-face interviews. However, even without the pandemic complications, it is very difficult to get access to Chinese scientists for interviews. We started by distributing 100 formal interview invitations via email addresses collected from lab web pages and got only one respondent. We learned that similar attempts by other researchers had equally failed to get any significant response (e.g. Yi et al. 2020).

We therefore used personal networks to get access to Chinese scientists. Our collaboration with Yuehong (Helen) Zhang, a prominent journal editor with good connections to researchers, has created opportunities to talk to Chinese scientists. In the end, these networks introduced us to a number of scientists, snowballing into a larger group. Unfortunately, this approach has a selection bias, but given the reticence to reply to randomized invitations, there is no effective alternative. In the interviews, some junior researchers suggested using supervisors' power to request more interviews with their team, but this would have raised doubts about anonymity and increased the risk of socially desired answers.

Therefore, our analysis is based on eighteen semi-structured, online interviews conducted with senior and junior Chinese scientists across science, technology, engineering, and mathematics (STEM) and medical fields. Our interview questions (see Supplementary 1) focused on how respondents reacted to the new journal lists and how the new valuation regime affects their assessment of journal quality. Specifics included their knowledge, understanding, and uses

of endorsed and discouraged journal lists; their criteria for 'good' and 'bad' journals; and how they evaluated others and got evaluated themselves. We wanted to investigate different journal valuation practices to see how they ascribed (diminished) worth to journals and how they interacted with external journal valuation regimes. All the interviews were conducted in Chinese, transcribed by Jing Wang, and analysed with ATLAS.ti. We chose a bottom-up coding process, with the initial coding categorizations based on the interview topics. Data or quotes that could not be classified into existing categories were coded to a new theme category. We profiled the eighteen interviewees by research field, seniority, and affiliated organization (see Supplementary 2). All respondents gave informed consent to participate in the interviews, which lasted between 40 and 69 min, 53 min on average. As such, this study is based on a small exploratory sample that cannot be considered representative and should not be used to derive statistical conclusions. The study highlights particular patterns in evaluation regimes, but any generalization of the study's findings to wider contexts should be done cautiously.

5. Findings

5.1 The reactions to endorsed journal lists differ from discouraged journal lists

In the interviews, we discovered marked differences in how researchers react to the endorsed and discouraged journal lists proposed in the state-led journal valuation regime. These differences concern how researchers accept and use these lists, but also the degree to which the lists are visible in the first place.

5.1.1 Reactions to endorsed journal lists

The new 'high-quality' endorsed journal lists are relatively unknown to our respondents. They heard about the endorsed journal lists from the news and knew they were part of ongoing research evaluation reforms, but took a wait-and-see attitude when it came to informing their publishing choices. Several informants referred to the endorsed journal lists in terms such as the 'conductor's baton of national orientation' (R3, R6, R9, and R13), but the involved reorientation has had no practical impact yet. Respondents mentioned that they would only take these lists into account if they were recognized by their university or hospital (R13 and R17). For these researchers, the context of their own research organization's policies appears more relevant than national policies.

The main aim of endorsed journal lists is to boost the status of domestic journals and encourage more publications in these journals, either through investing in domestic excellent journals (*China STM Journal Excellent Action Plan*) or through accrediting domestic journals in evaluation practices (*High-Quality STEM Journal Catalogues*). Whereas only a few respondents were aware of these endorsed lists, respondents were more familiar with the policy guidance encouraging publication in China's domestic journals.

Researchers offered additional justifications for why endorsed lists were rather irrelevant to their publication choices. One of the reasons given was that 'I know what main good journals are in my research field, so I don't really pay attention to others' (R2). The endorsed journal lists also lacked trust and credibility:

> I don't trust the manually-made whitelists because they don't have the same principles of transparency and fairness as the impact factor. (R11)

> It is not an easy task to reverse the dominant and over-relied effects of JIF in researchers' understanding and uses… Unless the ranking of journals in these endorsed lists is consistent with the JIF, if there is a contradiction, such as intentionally raising a journal to a high position, I think researchers will not choose to believe in these lists. (R4)

Nevertheless, endorsed journal lists already had effects on the assessment of universities and local governments' evaluation protocols. One respondent mentioned that his university used the endorsed journal lists because the Ministry of Education will use the lists as a reference in the discipline assessment (R1). In addition, publishing in domestic high-quality journals is required to qualify for provincial scientific awards. The endorsed journal lists provide a reference for evaluators and scientists to understand what journals are valued in awards assessment:

> Many provincial and municipal prizes and awards require that the participating researchers should have at least 40 per cent of the five representative works in domestic journals. (R12)

Another respondent similarly mentioned that these endorsed journal lists attracted more social attention and recognition to scientific journals and editors, providing momentum to the development of China's domestic journals (R6). The effect of endorsed journal lists on respondents therefore appears not to be direct but operates via the administrative impact on their organizations, which in turn translate state evaluation requirements to researchers. Researchers do respond to research organizations that control resources important to them. Therefore, our data suggest that these lists do seem to have an influence on researchers' publication choices, but only indirectly.

5.1.2 Reactions to discouraged journal lists

There was a wide awareness of the discouraged journal lists among the respondents, more than the endorsed journal lists. These scientists perceived a need to signal problematic journals, and they supported the mechanism to disqualify and discourage publications in such journals.

Respondents used the discouraged lists as a reference to avoid publications in problematic or low-quality journals and expressed a strong resistance towards such journals:

> We will never publish in any of these journals that have been blacklisted in the early warning journal lists… I would certainly also be strict with my students not to touch such journals. Even if you could not graduate because of no publications, you cannot publish your research in such journals. (R11)

In addition, many respondents got to know the specific discouraged journal lists their organizations use through internal email groups or internal formal notices of their departments. Research departments or organizations use the discouraged lists to remind researchers to avoid inferior publications,

and the APCs for such publications can generally not be reimbursed from project budgets. Moreover, inferior publications will disqualify researchers from organizational awards or prizes. In many cases, these awards or prizes are cash rewards for publications, or awards that further influence researchers' performance bonuses or promotion assessments. According to our respondents, these procedures strongly influence researchers' publishing strategies. The indirect effect through organizational policies here conjoins with the normative support for these lists.

Even though the discouraged journal lists have been endorsed by researchers, they still consider the constructive criteria and uses of such lists controversial, especially for the *Early Warning List of International Journals* by the National Science Library of the CAS. Respondents pointed out problems regarding its updating frequency and inadequate distinctions between problematic and open access journals:

> The dynamic adjustment speed of the blacklist is too fast, which has caused great trouble for us to use this list for (dis)qualifying of research achievements of graduate students… This list is updated every year. However, our publications will always take almost a year to get published… (R1)

> There is not enough distinction between the open access journals and warning journals in this list, which makes researchers misunderstand the open access journals as bad journals. (R3)

> The criterion of authorship internationalization, used to measure the percentage of Chinese scholars published in these journals, is discriminatory against the Chinese author community. (R16)

Moreover, researchers' interpretations of some quality criteria in discouraged lists differ from the lists' articulation and measurement. For example, the criterion of authorship internationalization in the *Early Warning List of International Journals* uses an unusually high percentage of Chinese authorship to disqualify journals, i.e. the high share of authors affiliated with Chinese institutes potentially signals questionable quality (Zhang et al. 2022). However, in scientists' view, internationalization means something else. As some respondents claimed, 'Chinese researchers have hardly been rejected by the journal' (R7), which referred to a low rejection rather than the publication rate. Others mentioned editorial affiliations of Chinese authors:

> Some editors in charge are Chinese researchers. They have certain preferences or biases for Chinese authors and tend to easily pass the first step of editor's check-in peer review and deliver their manuscripts to reviewers (R6).

Journal publishing speed is another inconsistency between respondents' attitudes and discouraged journal lists. The *Early Warning List of International Journals* identifies rapid publication promises by journals as a risky characteristic that deserves to be signalled (Zhang et al. 2022). However, respondents take an ambiguous attitude towards publication speed:

> The speed of publishing knowledge is actually very important… Some journals or publishers are professional at reviewing and publishing articles, like MDPI. They have a highly efficient and clear division of labour in their publishing office, and they are able to finish reviewing manuscripts within 1 day, so they can give a rapid publishing promise. I didn't see any problem with this rapid publishing speed… That the blacklist uses this as a criterion is open to question. (R13)

5.2 The effects of both endorsed and discouraged journal lists differ depending on the ranking status of universities, the seniority of scholars, and research fields

The endorsed journal lists seem to have differentiated impacts for different ranking levels of universities. The ranking status of universities determines the administrative budget appropriations. Some provincial governments will appropriate substantial additional financial support to universities in their jurisdiction that can reach a high position in university rankings (Chen 2021). Therefore, it is critical for universities to get a good grade in national rankings of both universities and research disciplines. Some universities can make use of the endorsed journal lists to carve out an advantageous position in the rankings of university and discipline, but not all universities have the resources to do so. Some of these ambitions create pressures that are passed on to researchers.

As a result, respondents are affected to different degrees depending on their institute's ranking. Respondents from lower-ranking universities scrambling for resources appeared more affected by new journal lists. In contrast, respondents from high-ranking universities seem more engaged in the 'international' evaluative culture and more able to publish in high-impact international journals. In addition, their universities have enough steady resources to provide a stable evaluation culture. These latter institutes can afford to resist 'new ways of doing things':

> Our university is not comparable to Tsinghua University and Peking University. Top universities could publish many papers in prestige international journals to get grades in the discipline assessment of the Ministry of Education. But some average universities could not. So now, this change/list rewards the same credits to Chinese journals as international journals, and these lists are recognized in the discipline assessment of the Ministry of Education, which gives us a leeway to compete for resources with top universities. Many average universities would like to publish in Chinese journals, which is more doable and reliable for them to get a good grade in the discipline assessment. (R1)

In addition, junior and senior researchers appear to face different assessment demands and pressures in their different career stages. Hence, new journal lists affect senior and junior researchers in our interviews unequally. Seniority usually brings scientists secure resources, which allows them more choice in research topics and publication outlets. Respondents mentioned that the discouraged journal lists are more influential for junior than for senior researchers. Senior researchers stated that they would no longer publish in discouraged journals, but this was a choice juniors may not have. One publication does not play a deciding role in a senior's career, but it can be an admission ticket for some junior researchers to

graduate or enter academia. Junior researchers may be desperate for a publication, but discouraged lists make this strategy harder. Respondents in engineering fields in particular suggested that the discouraged journal lists are mainly applied to junior researchers, for example, as graduation requirements for PhDs, but that they are not very relevant for senior researchers:

> I am in charge of graduate education at my university… We take the *CAS Early Warning List* very seriously… I handled a case a few days ago, in which a graduate submitted a manuscript to a journal that was not on the early warning list, but when the article was published, the journal had directly entered the early warning list… Because of this case, we held a special seminar to discuss whether this article is considered an SCI paper of the graduate and whether he can meet the graduation requirements. (R1)

> We are already handier at publishing articles, which enables us to publish articles in various journals, so blacklists do not set up so many limitations for us, for we have a wide range of options. However, for PhD graduates, who are in a hurry to graduate or want to publish results as soon as possible, the blacklists may put some restrictions on them, and their publishing choices are more limited. (R4)

> There is no way I would approve of my PhD student publishing in blacklisted journals. Most importantly, 99 per cent of these journals on the blacklist are open access journals that charge APCs. I could not afford the huge publishing costs if all my PhD students want to publish in such open access journals. (R13)

In addition, one respondent also believed that the endorsed journal lists are more influential for junior researchers with regard to their graduation and future jobs:

> The influence of whitelists is quite significant. For me now, since I have been promoted to professor, whitelists do not affect me much. But for my PhD students, when they apply for jobs in other institutions after graduation, a lot of organizations in China now start to review their CVs according to this benchmark, whitelists, which is equivalent to an invisible guiding effect. (R3)

Moreover, the journal lists have different effects in different research fields. In the interviews, the definition of high-quality standards of endorsed journals (*China STM Journal Excellent Action Plan*) has been rejected by a researcher from the field of forensic pathology for its narrow recognition among research disciplines:

> We do not care about the 'high-quality definition' of these endorsed journal lists, some of which are not friendly to emerging and niche disciplines in their selection of excellence, and do not recognize niche disciplines such as our forensic pathology. (R7)

However, the endorsed journal list (*China STM Journal Excellent Action Plan*) indeed recognizes the value of some other niche research areas, such as the field of Chinese medicine, and intentionally leans some resources towards such subject areas. There is even some degree of favouring the accreditation of journals from this field as high-quality journals (R18).

The discouraged journal lists are more influential for scientists in medical and engineering areas. Informants in medical fields mentioned that their own hospitals, as well as other hospitals, already had their own discouraged journal lists before the national initiatives (R8 and R14). Compared to the wide use of discouraged lists in graduation requirements in engineering fields, medical respondents pointed out that there is no explicit use of discouraged lists in graduation requirements in their field. Instead, such lists apply to all level researchers as a warning that they are not allowed to publish in such journals. They mentioned (R8, R10, and R14) the different publishing cultures among medical areas and engineering areas. Supervisors in the field of engineering sometimes have looser control over the publishing choices of their PhD students. In contrast, the medical field is a relatively hierarchically organized discipline, and PhD students are not able to publish articles whenever and where they want. The decision for publication venues is strictly made by the supervisor, who owns the data for the paper:

> It is unlikely that your supervisor would agree to publish in a poor-quality journal in a hurry just for finishing your PhD degree. The supervisor would only ask you to postpone your graduation in order to get qualified data for publication, but would not let you publish in low-quality journals. (R14)

In contrast, a microbiologist responded that the problems discouraged lists are trying to solve rarely occur in their research field (R2). A marine biologist mentioned that there is no use of the discouraged lists in his field:

> Since our field belongs to earth science, we mainly do objective descriptions. Whether the research is about the Yellow Sea, East Sea, or South Sea, it is the factual findings and analysis. Thus, it is impossible to have journals of our field on the blacklists. (R6)

Although respondents mentioned some such field-specific considerations, there was no general pattern.

5.3 Scientists do not just copy list classifications but have their own quality criteria

Despite the underlying quality standards that endorsed and discouraged journal lists aim to advocate, researchers have their own predominant criteria that are more important than the journal lists to assess journal quality.

5.3.1 Quantitative indicators

When asked about the criteria of good and bad journals, respondents repeatedly referred to the JIF without hesitation. The JIF metric has deeply influenced the ecosystem of Chinese science evaluation. It has become a performance standard dominating research practices and various assessment practices. After the JIF, the CAS Journal Ranking is viewed by respondents as the go-to list when considering where to publish their articles. Except for these two journal metrics, respondents mentioned other databases and journal lists, such as the Engineering Index, Scopus, Chinese Science Citation

Database, the Key Magazine of China Technology, and 'core journal lists' of Peking University.

It is interesting that the Essential Science Indicators (ESI) and the Nature Index (including 'eighty-two high-quality natural-science journals') were also mentioned as an indicator of good quality pertinent to publication choices. However, neither of them is intended to measure journal quality. The ESI is regarded as the critical criterion in the national university and discipline assessments (Shu, Liu, and Larivière 2022; Shu et al. 2023). However, the use of ESI indicators for university performance assessment has aroused wide disputes, which has been considered a 'theatre of the absurd' and was sought after by many Chinese universities (Di 2019). Moreover, journals in the Nature Index were regarded by respondents as the 'widely acknowledged' top-ranking journals, which have been assumed as one of the national orientations to encourage more publications (R13).

Various arrangements and combinations of JIF usage differ between research areas and university evaluative settings. Respondents mentioned that their research organizations have a very specific assessment formula for performance and promotion evaluation. Some research organizations counted only publications in Q1 and Q2 of the CAS Journal Ranking in performance and promotion evaluation (R1, R2, and R12). For junior researchers in some hospitals, assessment is specifically based on the number of papers and their journals' impact factor (R9, R10, R14, and R17):

> The minimum entry to get into the promotion process of an associate professor is one provincial grant or more, and seven papers, which could also mean eight papers… Our hospital has a specific calculation formula: one paper with a JIF over five is equal to three papers… or the recent change is: a paper in Q1 of the CAS ranking is equal to three papers, and a paper in Q2 is equal to two papers, or maybe only one. (R14)

Because of the shift from quantitative to qualitative assessment, researchers substituted the JIF with equivalent valuation terms such as 'high-level paper' or 'representative work', but turned to familiar indicators to assess this. For some research institutions, 'high-level papers' or 'representative works' are publications in Q1 and Q2 of the CAS Journal Ranking (R1 and R2). There is no explicit list of good journals for some research groups or institutions, but rather an informal, shared understanding of the journal 'hierarchy' in their fields or among colleagues to assess what is a 'high-level paper' or 'representative work', and this perception has already been shaped by earlier evaluative regimes, such as the quartiles of the CAS Journal Ranking. Some institutions have adapted their evaluation methods to appreciate a wider range of quality criteria, but quantitative output measures still prevail. This is even more clear when respondents were asked how they get evaluated by others (peers, grants, promotions, awards, etc.). The straightforward quantitative performance indicators push them into 'thinking with indicators', which has become a central aspect of research activities themselves (Müller and de Rijcke 2017).

Therefore, 'JIF is quality' is deeply engrained in researchers' perception of publication quality and has shaped their research practices: the JIF has come to perform quality. This phenomenon echoes the national policy concerns and the reform determination from quantitative to qualitative evaluation protocols.

5.3.2 Publisher branding

A publisher's brand was also mentioned as a highly preferred sign of what respondents considered a 'good journal'. A survey of drivers behind the choice of publication among Chinese researchers in 2021 also confirmed this preference, with the prestige of publisher brand in the top three, after the journal reputation and journal impact metrics (Zhang and Liao 2022).

There is an obsession with the big commercial franchise publishers as a brand, and their branded journals are considered trustworthy journals. *Cell, Nature*, and *Science* (CNS)-branded journals always mean high quality and a good reputation to our respondents. No matter whether senior or junior, all researchers wanted to publish in CNS and their branded journals (R2, R4, R7, R8, R12, R13, and R14). A notable example is the *Nature* brand: whether it concerns *Nature*-brand journals or the Nature Index, the Nature publishing group is a big business success in the Chinese science community (Li 2016).

> *Science*, *Nature*, and *Cell* are definitely top journals that could be regarded as the best journals for all scientists. The next level down has journals belonging to the *Nature* brand. Then there are journals that gained high recognition in our research area, let's say higher professional. For the next level, we will use the JCR Quartile of the CAS to make publishing choices. (R2)

The name seems to matter more than the actual publication quality: the quality of CNS will somehow be transferred to its 'subjournals'. CNS outweighs professional journals in respective research fields, and one of the reasons is that CNS publications are strongly correlated to researchers' salaries, funds, and professional titles (R2, R6, and R12).

However, some journals' reputations under the umbrella of the big-branded publishers are gradually losing prominence and bringing problems to researchers in some respects:

> I will never read and publish in *Scientific Reports* anymore… It would cost me a lot of time to pick out one or two articles worth reading from a huge amount of articles… I thought it was a good journal back in the day because it used the *Nature* brand to advertise itself, and I published a very highly cited article in it a long time ago. However, it is over now… I can't and won't list this paper in my publication profile and I will consciously delete it because it affects people's perception of me as a researcher. (R11)

In addition, there is an ambivalent attitude towards 'negative-brand' publishers. For example, MDPI and Frontiers-branded journals are notorious in some respondents' perception, for they are perceived to massively publish 'trashy' papers rapidly and charge APCs too high for Chinese researchers (R11 and R12). However, in other researchers' eyes, MDPI journals are not bad, for they have professional editorial teams and a specialized division of labour, which is seen as an explanation for why they publish very fast (R13).

The newly advocated evaluative mechanism of 'high-level paper' or 'representative work' aims to promote attention to

quality over quantity of publications. However, since quality assessment is considered too difficult and obscure to operate in practice (R6), this prompted a trend among Chinese researchers to only consider publications in *Cell, Nature, Science*, and their branded journals as high-level papers (R11). It results in more fierce competition among Chinese researchers to publish in such prestigious venues. This 'high-level paper' or 'representative work' mechanism aggravates the potential risks of the extreme use of the journal brand to give researchers a sense of what high-quality journals are.

The brand strategy of prestigious journals has been used by academic publishers to capitalize on their reputation to generate profits (Khelfaoui and Gingras 2022), a commercial logic in which the branding reputation is separate from actual journal quality. In turn, the branding of journals is valorized as a quality indicator by researchers, who seem unaware or indifferent to the commercial intentions behind journal branding.

5.3.3 Epistemic cultures

Field-specific peer recognition of journals was a highly valued criterion to assess journal quality for our respondents. Scientists' criteria for good and bad publications are primarily shaped and influenced by their epistemic culture's assessments:

> Profession is the primary and the most important factor to inform our publication choices… Professional journals, I mean, fitting with our research fields, recognized by my field peers, and publishing classic and best papers in our fields. (R4)

Even the pervasive logic of the JIF will not always outweigh the standards of the profession or expertise:

> There are some journals with a high-impact factor, such as fast-growing new journals or Chinese journals with a high-impact factor in our research field, but everyone does not necessarily want to publish in these journals. Most of us still prefer some journals that are recognized by peers in the field for their long history, even if such journals do not necessarily have a higher impact factor than the aforementioned journals. (R2)

When asked what criteria they valued to assess other researchers' work, they stressed originality and novelty, continuity, systematicity, and validity. At the same time, they also endorse indicators such as the JIF and do not seem to make a clear distinction between epistemic quality and indirect proxies such as publication metrics.

There is a striking example of field-specific processes in the medical sciences. Research-oriented hospitals impose pressure on individual clinicians to conduct a type of knowledge production for which they are not equipped. This remarkable feature in the epistemic culture of medical sciences is not shared by other research fields:

> As a junior clinician, I have to consider what kind of research to do in order to achieve my professional title. The title is directly related to my salary, and to be frank, whether I can make a life… I think you should not overly ask or push clinicians to do basic research. Clinical research is also valuable, such as prospective studies, randomized controlled trials, and multicentre research trials, whereas this kind of research always takes a very long term and cannot generate rapid results and publications that have a high JIF, compared to basic research. This type of research is unrealistic for us… Sometimes, if you are particularly unlucky, you may even get negative results. No journal will like negative results. (R17)

Sometimes such pressures compel them to make a compromised decision on what kind of publication to produce. Short-term and rapid-result research makes promotion easier, even though they know this type of research is potentially of low quality or even meaningless. In this regard, researchers' valuation of certain publications contradicts the state's evaluation regime and even contradicts general publication standards.

5.3.4 Editorial procedures and publishing models

A journal's editorial procedures and publishing models are also critical to our respondents for selecting a publication venue. The professionalization and quality of reviewers and reviews, the qualification of editorial boards and teams, and the specialization of publishing procedures and publishing speed, all of these indicators have also been considered relevant to journal quality.

It is noteworthy that the new open access publishing model is an influential factor in researchers' publication choices. As payment models for scholarly publishing change, respondents mentioned that the APC and how they pay for it are becoming an influential factor in their publishing considerations. At the moment, the development of open access is proceeding at different paces in different countries, and China is still exploring the most suitable path for its own open access implementation (Yang 2021). There are no clear rules in Chinese academia about how to fund APCs and engaged stakeholders are still working on the best plan for Chinese scientists to embrace open access (Montgomery and Ren 2018; Yang 2021). In terms of 'bad journals', APCs are an important factor that discourages researchers and makes them distrust some open access journals, discouraging publication in these journals even though they are indexed in the Web of Science. Respondents argued that open access journals with high APCs, low selectivity of articles, and fast publishing speed sabotaged the reputation of open access, which resulted in low trust in (new) open access journals from Chinese scientists (R11).

6. Discussions and conclusions

This paper presents an empirical analysis based on a small exploratory sample to explore how scientists react to the new Chinese journal lists and how the new valuation regime affects their assessment of journal quality and publication strategy. In respondents' journal valuation practices, the interplay between three logics plays a significant role: institutional evaluation regimes, epistemic cultures, and the influence of the commercial publishing industry.

Journal lists are a part of institutional evaluation regimes that the state (and research organizations) intends to use to redefine the quality of journals so as to assist reforms of evaluation protocols from quantitative to qualitative. Chinese journal list initiatives express specific national needs and aim to enact policies to change researchers' publishing

practices. In terms of reactions to the lists, endorsed journal lists generate different reactions than discouraged journal lists. The endorsed journal lists seem relatively unknown and irrelevant to our respondents, whereas the discouraged journal lists are more welcomed. This might be because the consequences of publishing in discouraged journals are perceived as more concrete than the consequences of publishing in the endorsed journals. Moreover, the consequences related to the discouraged journal lists are concretely negative. However, the endorsed journal lists have important indirect effects. The interaction between researchers and the endorsed journal lists appears not in plain sight but via the administrative impact on research organizations and their deployment of evaluative indicators of researchers' performance.

Endorsed journal lists attempt to develop high-quality domestic journals and accredit domestic journals with the same scores as international journals in research and performance evaluation. These endorsed journal lists are deployed by a suite of science policies and state guidance to encourage researchers to publish more in China's domestic journals. National and regional evaluators implemented this new measurement standard in a range of research evaluation practices, such as national discipline assessments and provincial science awards. In these assessment practices, the criteria of local journal relevance are translated and arranged into each research organization's evaluation regimes to incentivize individual researchers' publishing practices towards the need for institutional performance assessment. This is where researchers most prominently encounter the national initiatives.

Our data suggest that the significance of journal lists in respondents' journal valuation may differ depending on their institute's ranking and their career stage. Respondents from the relatively lower-status universities have been encouraged by their institutes to value domestic journals in the lists, in response to the national governance efforts to value domestic journals in national assessment. Such a strategy provides their universities with a leeway to compete for resources with top universities. In addition, different career stages with different evaluation demands and pressures also play a role in how to value journal lists since junior researchers do not always have the equivalent choice in research topics and publication outlets. In order to graduate or get entry into academia, timing and speed of publication may be more crucial for early career researchers.

In addition to institutional evaluation regimes, our respondents suggest that the epistemic cultures of varying research fields may also inform their perception of what is a good journal. As the state-led evaluative regime imposes particular quality criteria on individual scientists, it confronts the specific evaluation cultures of research fields. This confrontation creates a tension in researchers' publication choices between the internal norms and characteristics of each discipline and the external evaluative demands or pressures. In some cases, the relevance of good journals is based on traditions and past performance, for example, through shared peer recognition of professional journals in the field. When the national initiatives of local journal relevance meet with stable epistemic cultures, some scientists do not accept the imposed criteria because of the low trust in the artificial and state-led journal metrics.

Furthermore, our exploratory research suggests that some other factors remain more predominant than journal lists for influencing respondents' valuation of journals: journal quality based on bibliometric indicators, reputational journal brands, editorial procedures, and publishing models. The most common logic underpinning our respondents' journal valuation practices is via the counting of journal citations (JIF) and via the brand effect of publishers. This commercial branding logic includes journals and indicator products that have been introduced and utilized by publishing companies in the Chinese science ecosystem and that have influenced quality perceptions and publication choices of Chinese scientists.

However, there are tensions and inconsistencies in how these different valuation regimes are trying to define what is a good or bad journal. For example, publication speed is used in conflicting ways among the criteria of discouraged journal lists, respondents' perceptions, and journals' marketing strategies. While high publication speed is used as a marketing tool by some, it is considered a sign of dubious publishing practices by others. Another example of conflicting use of the same indicator is writing and publishing in Chinese; this initiative has been encouraged in the endorsed journals and national policies but has not been valued by our respondents, who appeared very hesitant to embrace it. In addition, the endorsed journal lists are intended to encourage Chinese authors to publish in a set of domestic journals. However, such an initiative is inconsistent with the use of the share of Chinese authorship in international journals as a criterion to disqualify journals on the discouraged lists. Greater shares of Chinese-language or Chinese authors are considered a virtue in some contexts and a vice in others. In such an ecology of valuation regimes, inconsistencies and conflicting approaches have created tensions in researchers' perceptions of journal quality.

In short, none of these valuation regimes has the absolute overarching power over the others to determine what a good/bad journal is for researchers (Helgesson 2016). Chinese evaluation regimes are less monolithic and less centralized than expected. Even within the governmental strategic efforts, there are competing initiatives. State agencies have developed multiple lists, which also compete with international valuations. While providing conflicting valuations, this multiplicity has also created some possibilities for individual researchers to find a niche in the system. As such, individual researchers get some manoeuvrability as they juggle with these different valuation regimes and logics to come up with individual conclusions about journal quality and publishing choices.

Journal lists have been deployed in China to address research policy concerns, such as the over-reliance on indicator-driven evaluation, the goal to build a national publication and valuation infrastructure, and the undesirable side effects of open access publishing. However, the implementation of these lists appears to have generated intended and unintended governance effects. For instance, the use of 'representative work' has been advocated to replace over-reliance on quantitative publications and citation indicators. However, this mechanism may introduce new distortions by overly relying on top-tier or prestige journal brands as a proxy for 'quality'. Similarly, the discouraged journal lists have mostly targeted open access journals with high APCs, which has led our respondents to perceive 'pay-to-publish' open access journals as problematic, regardless of the journal's quality.

In terms of the different metrics and indicators, no matter what actor develops them, there is always a risk that indicators become performative across institutional and individual levels. Metrics are deployed by the government as governance

tools to assist and manage science, to incentivize and assess the productivity of research organizations, and to use them as a reference to make funding allocation decisions. In turn, research organizations can use metrics to handle researchers and could also manoeuvre them to the extreme to get good credits in performance assessment so as to gain the resources and the reputation that these metrics entail to them. The same logic applies to individual researchers: in order to make a life in academia, they could be governed by the metrics, and they could also make use of the metrics to achieve an advantage.

However, not every valuation regime, index, and indicator is reactive. In reactivity theory, people will react to metrics that assess them, but not all the metrics have this effect. Reactivity only occurs in cases where these valuations are established as influential, recognizable, and powerful. Not all valuations end up effectively performing quality. To our respondents, it mattered whether lists had concrete consequences, namely whether their valuations were translated to their professional and organizational contexts. They appeared to have especially strong effects on less prestigious organizations trying to compete for more resources. In the ecology of incoherent valuation regimes, there is room to manoeuvre but more room for some than for others. We suggest that this pattern can be of interest to other sets of incoherent valuation regimes as well.

This study has explored a limited range of processes affecting how Chinese scientists react to lists that value journals, using a limited set of qualitative interviews. While offering a rare glimpse into this world, there are also limitations, including problems with enrolment and having to interview online. Our respondents were clearly unfamiliar with this kind of investigation, but the approach was accepted and complimented by the respondents.

Even though the Chinese state has solid considerations for improving evaluation benchmarks, our study shows that the implementation of new journal metrics should always consider the contextualized science system, with its specific social structure and management practices. Chinese journal lists have indeed changed the publishing ecosystem, with increased paper submissions to domestic journals (Chen 2021; Li et al. 2021) and lowered publications to some (international) journals (Petrou 2021; Zhang et al. 2022). However, the journal lists should be responsibly used at the national, institutional, and individual levels (Pölönen et al. 2021), and some unintended effects have reappeared in new ways. It is therefore equally relevant to monitor the publication practices that the new journal metrics induce and adjust measurement tools to dynamic publishing cultures. Further research will be needed to get a more complete picture of the role of new evaluative measures in the Chinese science ecosystem, which would benefit from comparative studies on national journal lists changing the scholarly publishing landscape in global science.

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Supplementary data

Supplementary data is available at *Science and Public Policy* online.

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Data availability

The anonymous interviews have been made with consent with the stipulation that transcripts or recordings will not be published. Public documents are accessible via the references given in the paper.

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